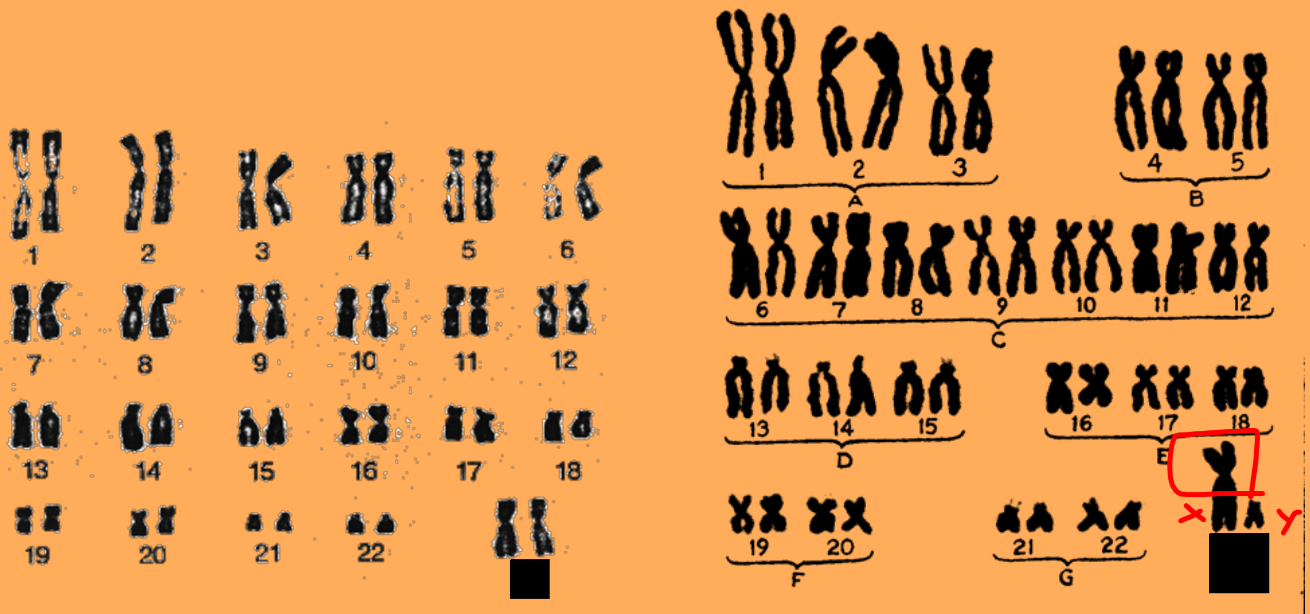


Human Heredity

- When scientist want to study chromosomes they need to look at cells that are undergoing mitosis. *Prophase*
Chromatin → chromosomes
- At this time the chromosomes become condensed and easier to see under the microscope
- A picture is taken of the chromosomes and then the chromosomes are cut out of the picture and arranged in homologous pairs. This arrangement of chromosomes is called a **karyotype** chart.

Which is the karyotype of a boy?



1 pair of sex chromosomes

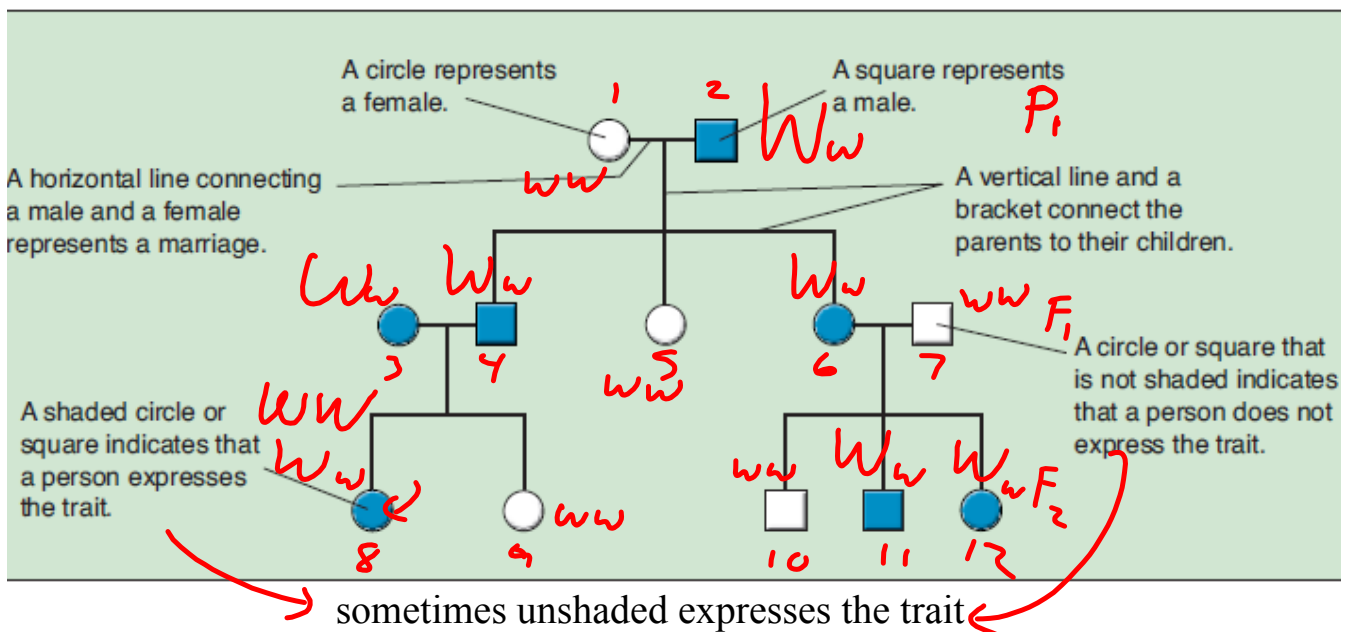
22 pairs of autosomal chromosomes

Lesson 7 Human Genome.notebook

EXPLORING HEREDITARY TRAITS
DATA TABLE

TRAIT	YOUR PHENOTYPE	YOUR POSSIBLE GENOTYPE(S)
Tongue Rolling Dominant = Ability to roll (RR or Rr) Recessive = No ability to roll (rr)		
Free Ear Lobes Dominant = Free (FF or Ff) Recessive = Attached (ff)		
Widow's Peak Dominant = Present (WW or Ww) Recessive = Absent (ww)		
Straight Thumb (Extension of end thumb joint) Dominant = "Hitchhiker's Thumb" (JJ or Jj) Recessive = Straight Thumb (jj)		
Bent Little Finger Dominant = bent (SS or Ss) Recessive = Straight (ss)		
Left-over- right Thumb Crossing Dominant = Left (LL or Ll) Recessive = Right (ll)		
Chin Cleft Dominant = Present (CC or Cc) Recessive = Absent (cc)		
Mid Digital Hair Dominant = present (FF or Ff) Recessive = absent (ff)		
Short Big Toe Dominant = Present (TT or Tt) Recessive = Absent (tt)		
Eye Color Dominant = Brown (BB or Bb) Recessive = non brown (bb)		
Eyelashes Dominant = Long (EE or Ee) Recessive = Short (ee)		
Color Vision Dominant = Not Color Blind (NN or Nn) Recessive = Color Blind (nn)		
Hair Color Intensity Dominant = Dark (DD or Dd) Recessive = Light (dd)		
Red Hair Pigment Dominant = Absent (RR or Rr) Recessive = Present (rr)		
Hair Whorl Dominant = Clockwise rotation (HH or Hh) Recessive = Counterclockwise (hh)		
Hair Form Dominant = Curly (KK or Kk) Recessive = Straight (kk)		
Darwin's Ear Point Dominant = Present (PP or Pp) Recessive = Absent (pp)		
Dimpled Cheeks Dominant = Present (CC or Cc) Recessive = Absent (cc)		
Tongue Folding Dominant = Ability to Fold (TT or Tt) Recessive = No Ability (tt)		
Long Palmer Muscle Dominant = Absent (MM or Mm) Recessive = Present (mm)		
Ability to taste PTC Dominant = Taster (XX or Xx) Recessive = Non-taster (xx)		

- to study the passing of traits from 1 generation to the next, biologists use a flow chart called a pedigree chart



WW Ww ww

- this chart represents the trait of a lock of white hair just above the forehead
- the white forelock is a dominant trait
- based on this information determine the genotypes of each person

Human Genome Project

- involved in analyzing the human gene sequence
- began in the 1990's and by the earlier 2000's a copy of the human genome was complete (about 6 billion base pairs)
- gene therapy = replacing or repairing faulty genes

 <https://www.youtube.com/watch?v=nhoEvAY0ToM>

- is this ethical?
- is curing diseases OK?
- how about creating a perfect??human

Review Questions:

Page 283:1-5,11,13,14,18

Page 363: 2,5,6,7,10,12,14,15

- ① Mendel → 3 principles (laws)
- ② Punnett squares - monohybrid crosses
- ③ Dihybrid crosses

$$\begin{array}{c|cc}
 & BT & bT \\
 \hline
 BT & BBTT & BbTt \\
 bT & BbTt & bbTT
 \end{array}$$
- * ex: $BbTt \times BbTt$
- ④ Incomplete
 - ↳ Intermediate dominance
 - ↳ Co-dominance
- ⑤ Multiple Alleles

$$\begin{array}{c}
 I^A I^A \quad I^A I^B \quad I^B I^B \\
 \hline
 I^A I^A \quad I^A I^B \quad I^B I^B \\
 \hline
 ii \quad I^A I^B \quad I^B I^B
 \end{array}$$
- ⑥ Sex Linked traits

include X's & Y's

♀	X ^m	X	Y
X			
X ^m		X ^m Y	
- ⑦ - Human Traits
 - Pedigree charts

Human genome project
Gene therapy